Marine Zone Monitoring Program: Florida Keys National Marine Sanctuary

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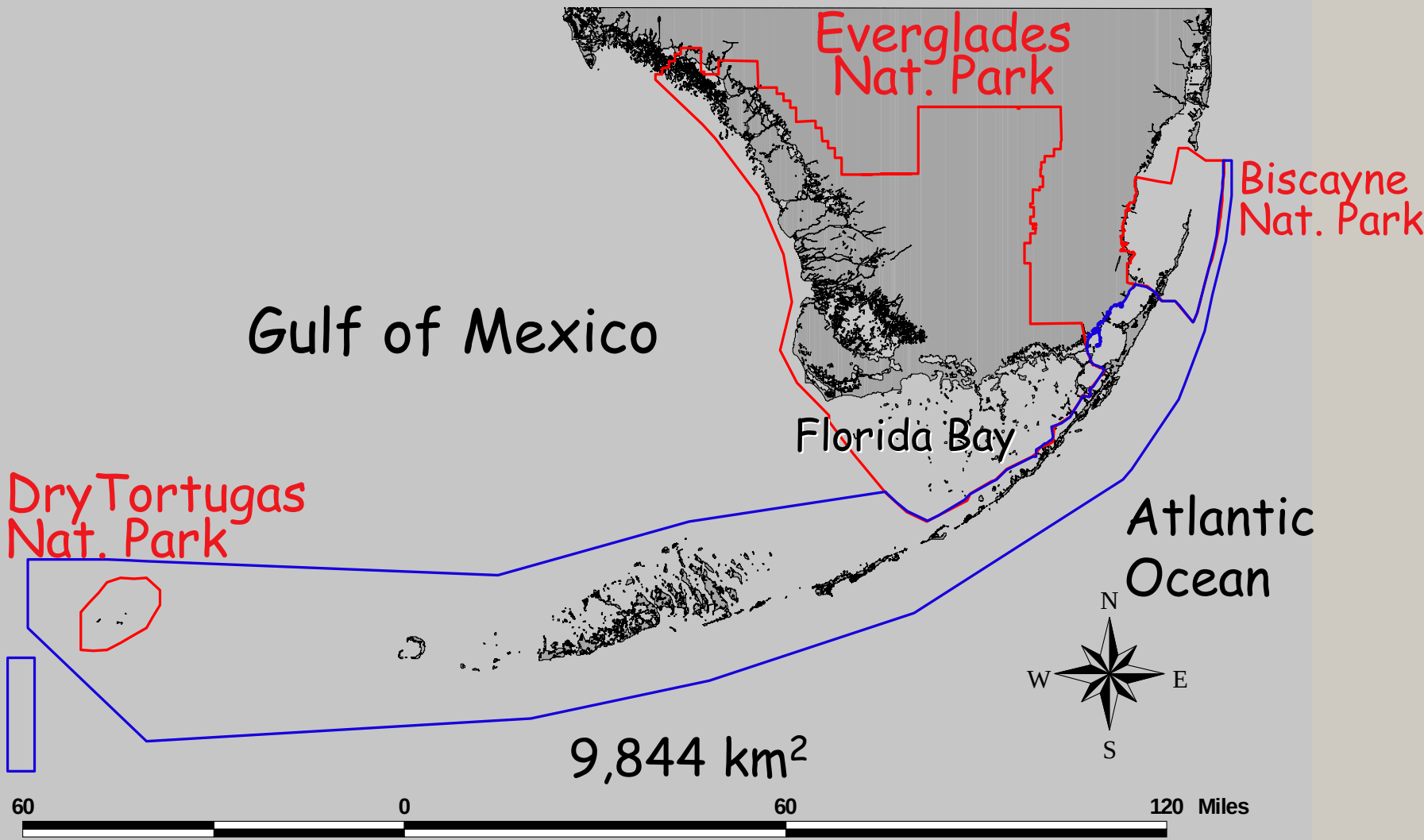
Florida Keys National Marine Sanctuary


Bermuda
The Bahamas
(Havana)
Mexico
Cuba
Turks and Caicos Islands
(Mexico City)
Cayman Islands
Haiti
Jamaica
Navassa Island
Puerto Rico
Anguilla
Saint Kitts and Nevis
Montserrat
Guadeloupe
Dominica
Martinique
Saint Lucia
Saint Vincent and the Grenadines
Grenada
Belize
Guatemala
Honduras
El Salvador
Nicaragua
Aruba
Costa Rica
(Panamá City)
Panama
Colombia
N
W
E
S
© 2006 Europa Technologies
Image © 2006 TerraMetrics
Image © 2006 NASA
© 2005 Google
Pointer 17°43'43.50" N 78°41'31.85" W
Streaming 100%
Eye alt 2301.06 mi

Florida Keys National Marine Sanctuary

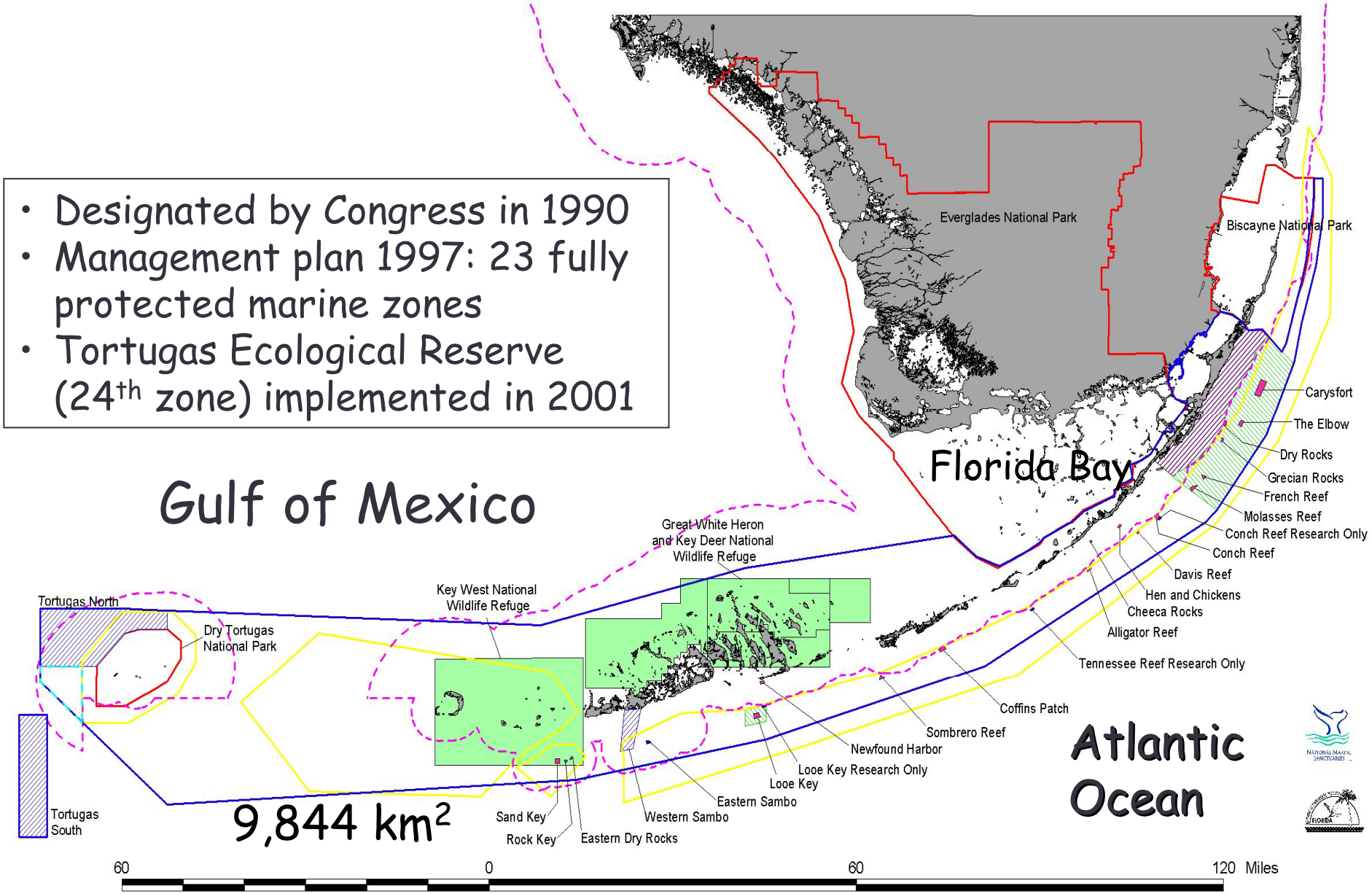


FKNMS Fully Protected Marine Zones: Three Types

- Sanctuary Preservation Areas (18)
  - 0.2 - 5.1 km^2
  - Shallow, heavily used reefs
  - Reduce user conflicts
- Research-Only Areas (4)
  - 0.3 - 0.7 km^2
  - Permitted research/education
- Ecological Reserves (2)
  - 31 and 518 km^2
  - Encompass range of habitats
  - Ecosystem function/biodiversity

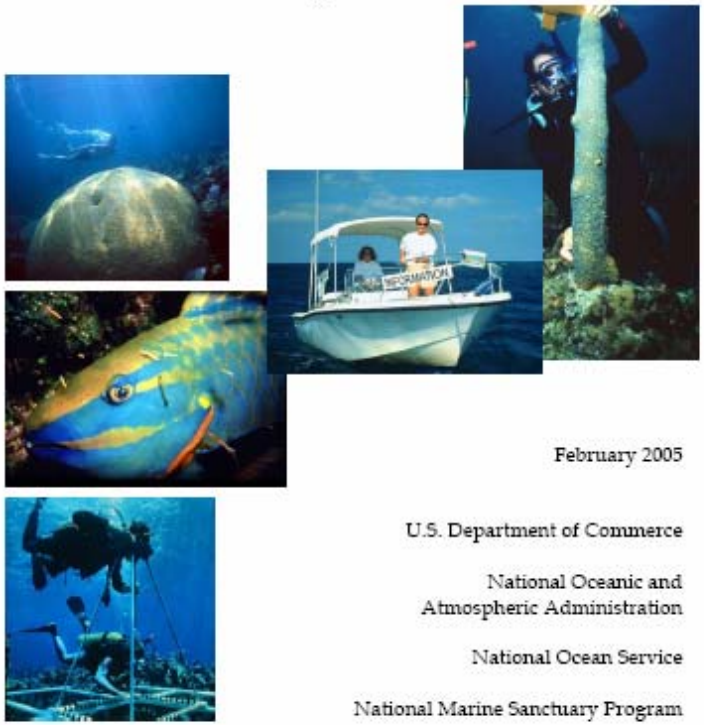
Florida Keys National Marine Sanctuary

- Designated by Congress in 1990
- Management plan 1997: 23 fully protected marine zones
- Tortugas Ecological Reserve (24th zone) implemented in 2001



FKNMS Science for Management

Florida Keys National Marine Sanctuary Draft Revised Management Plan



February 2005

U.S. Department of Commerce

National Oceanic and Atmospheric Administration

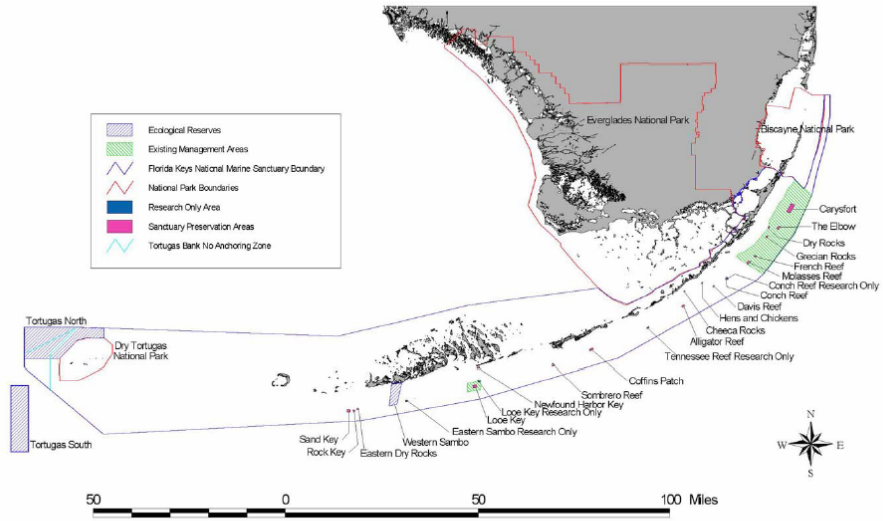
National Ocean Service

National Marine Sanctuary Program

http://floridakeys.noaa.gov/

Florida Keys National Marine Sanctuary

Comprehensive Science Plan



1 November 2002 Final Draft

FKNMS Science Plan

- Science Advisory Panel independent peer review of FKNMS science program, 2000
- Resource Management Team retreat at Fort Jefferson to develop a science plan, 2001
- Science plan drafts and reviews, 2002
- Second Panel review/science plan revision 2006-07

FKNMS Science Needs

Management objectives and associated monitoring and research needs

- Physical oceanography
- Water quality
- Coral reef communities
- Hard-bottom communities
- Seagrass communities
- Algal communities
- Mangrove communities
- Fish communities
- Queen conch
- Spiny lobster
- Other benthic invertebrates
- Additional needs

FKNMS Science Plan Example

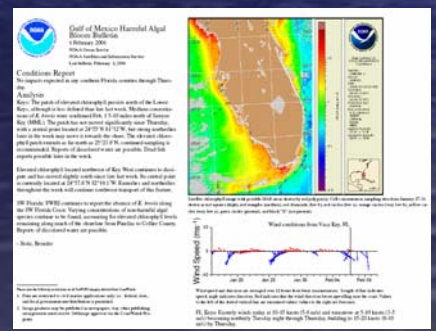
- **Management objective:** Improve our understanding of how regional and local water circulation patterns influence water quality in the Florida Keys.
  - **Monitoring Need:** Maintain or expand the existing SEAKEYS network of monitoring buoys to provide a long-term set of physical oceanographic parameters.
  - **Research Need:** Develop an internal circulation model for the FKNMS that will interface with other models and will tie together local, regional, and larger-scale patterns.
  - Research Need: Correlate existing water circulation monitoring projects with remote sensing.

FKNMS Science Program: Monitoring

- Coastal Ocean Observations: Remote Sensing and Field
- Water Quality Protection Program Monitoring Projects
- Marine Zone Monitoring Program

Long-term Monitoring Program: South Florida and the FKNMS (1)

- South Florida Coastal Ocean Observations
  - SEAKEYS C-MAN Stations (FIO)
  - Bi-monthly Cruise Tracks, Drifters, and Stations (NOAA AOML/RSMAS): http://www.aoml.noaa.gov/sfp/
  - Gulf of Mexico Harmful Algal Bloom Bulletins (NOAA CoastWatch): http://coastwatch.noaa.gov/hab/bulletins_ms.htm
  - Red Tide Status reports, Southwest Florida Coast (FWC FWRI): http://www.floridamarine.org/
  - Florida Keys Red Tide Monitoring Program reports (Mote): http://isurus.mote.org/Keys/red_tide.phtml
  - Coastal Ocean Monitoring & Prediction System (USF COMPS): http://comps.marine.usf.edu/
  - Institute for Marine Remote Sensing (USF IMaRS): http://imars.marine.usf.edu/
  - Coral Reef Watch – Sombrero Reef (NOAA): http://coralreefwatch.noaa.gov/satellite/ge/
  - Florida Keys BleachWatch Program, Current Conditions Reports (Mote)
  - FKNMS Thermographs (FKNMS)



Long-term Monitoring Program: South Florida and the FKNMS (2)

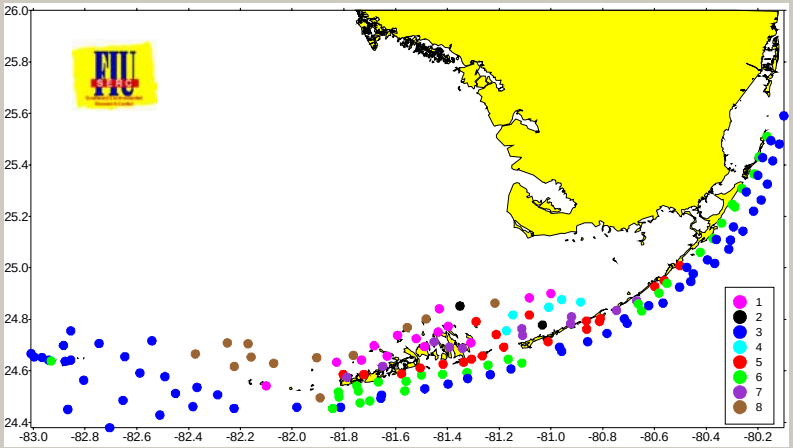
- Sanctuary-wide Status and Trends: Water Quality Protection Program
  - Water Quality (FIU SERC)
  - Seagrasses (FIU SERC)
  - Coral Reef and Hard-bottom Communities (FWC FWRI)

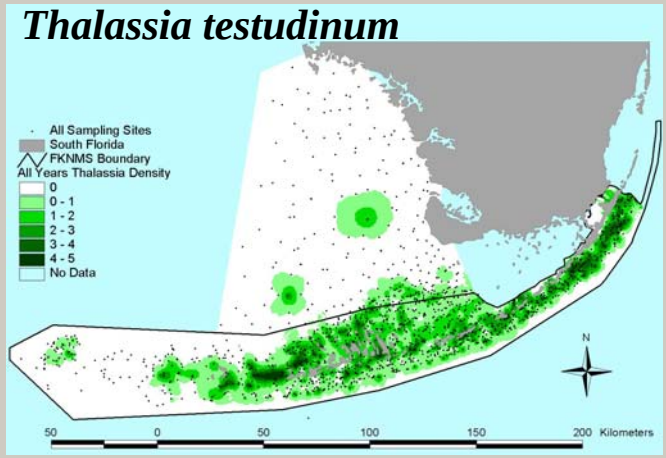
  http://ocean.floridamarine.org/fknms_wqpp/
- Marine Zone Monitoring Program
  - Coral Community Structure, Recruitment, and Juvenile Dynamics (FIO/DISL/GSU)
  - Rapid Ecological Assessments (UNCW/NURC)
  - Reef Fishes (NOAA NMFS/RSMAS and REEF)
  - Spiny Lobster (FWC FWRI)
  - Queen Conch (FWC FWRI) [protected state-wide since mid-80s]
- Human Dimensions Research (NOAA/RSMAS/UMASS)

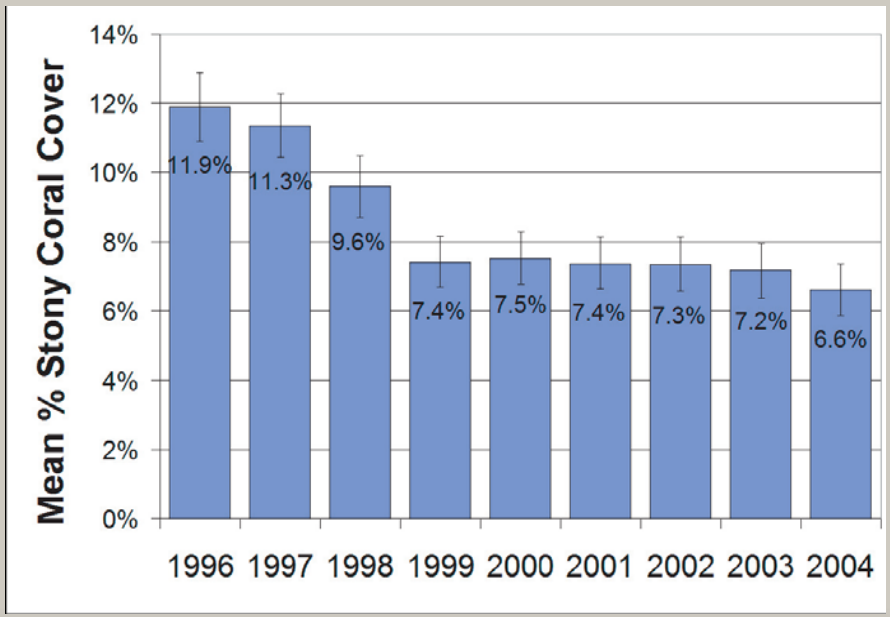
  http://marineeconomics.noaa.gov/
  http://floridakeys.noaa.gov/research_monitoring/

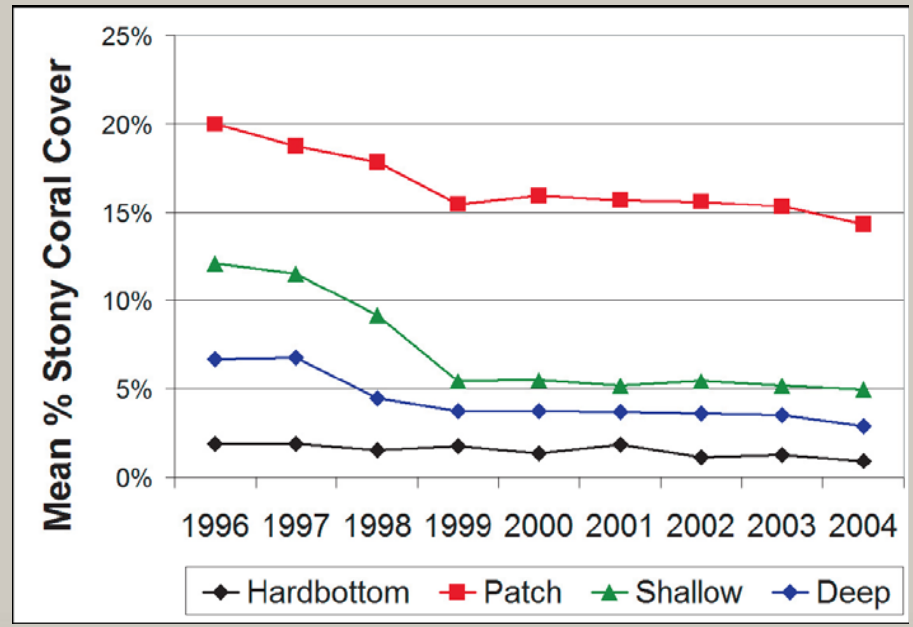
Water Quality Protection Program

http://ocean.floridamarine.org/fknms_wqpp/



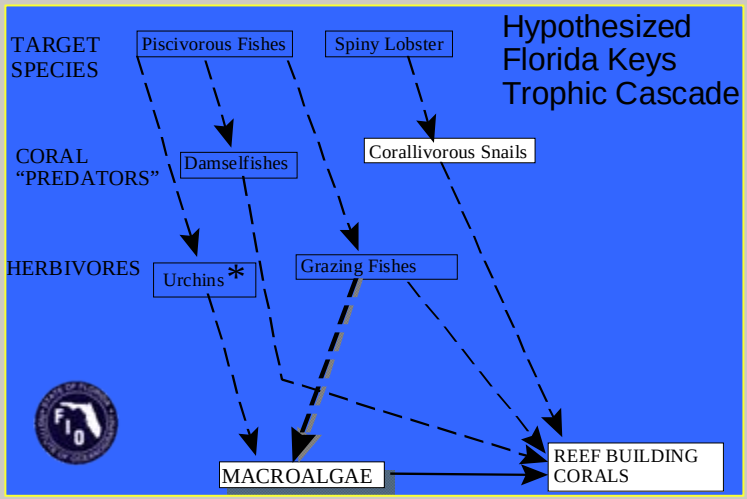


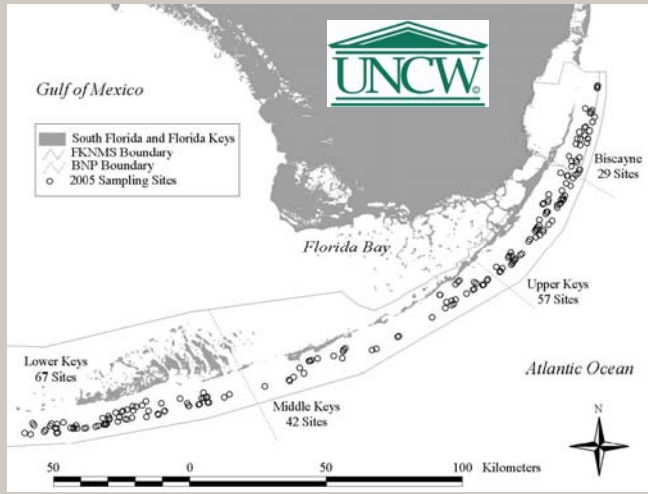


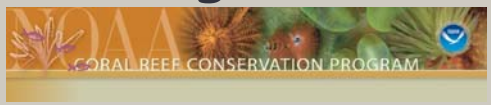


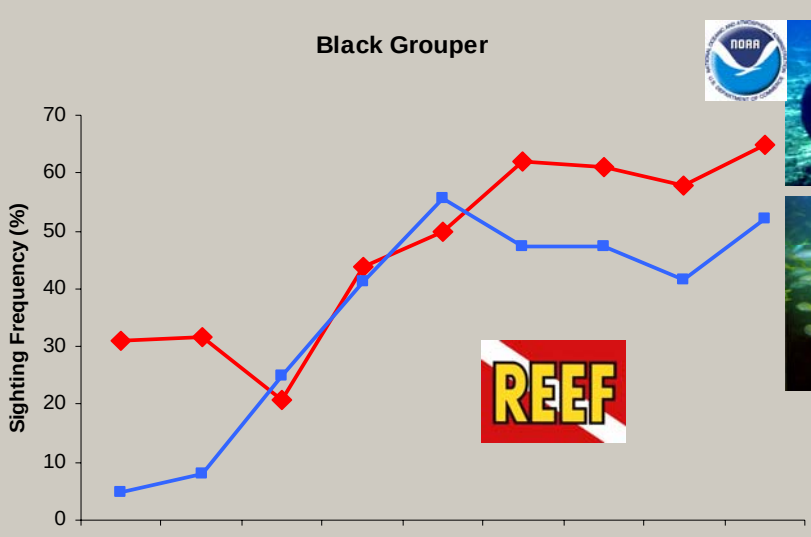
Marine Zone Monitoring Program

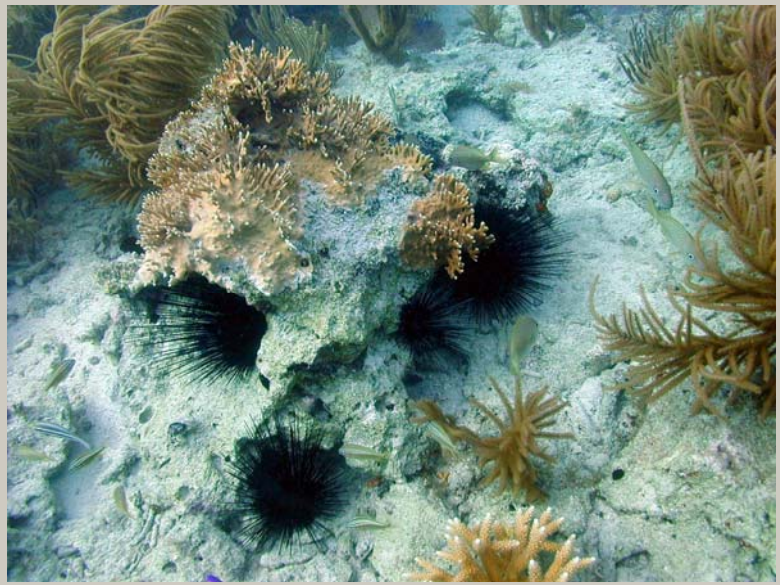
http://floridakeys.noaa.gov/research_monitoring/





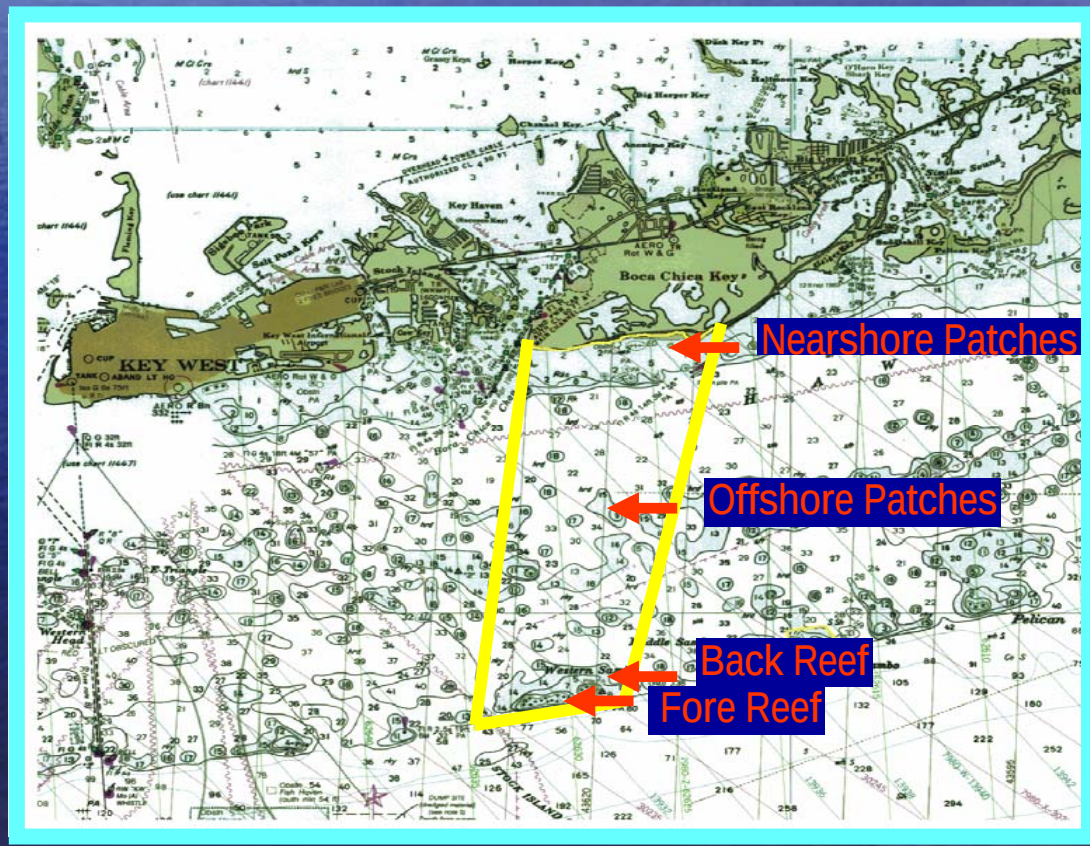






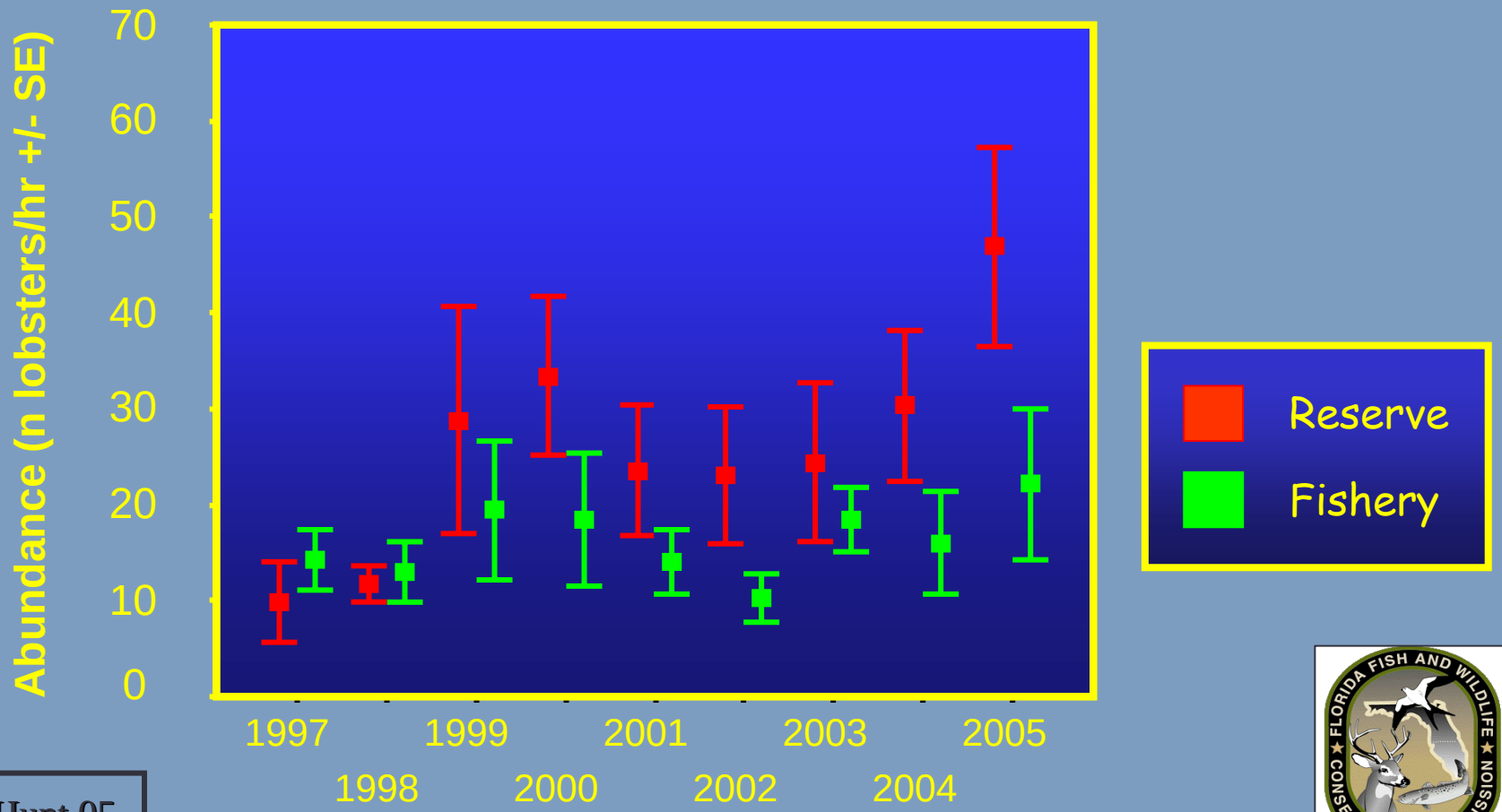
Western Sambo Ecological Reserve

- 3,000 ha reserve comprising habitat for juvenile and adult lobsters
- Fishing prohibited as of July 1, 1997



Abundance of legal-sized Lobsters

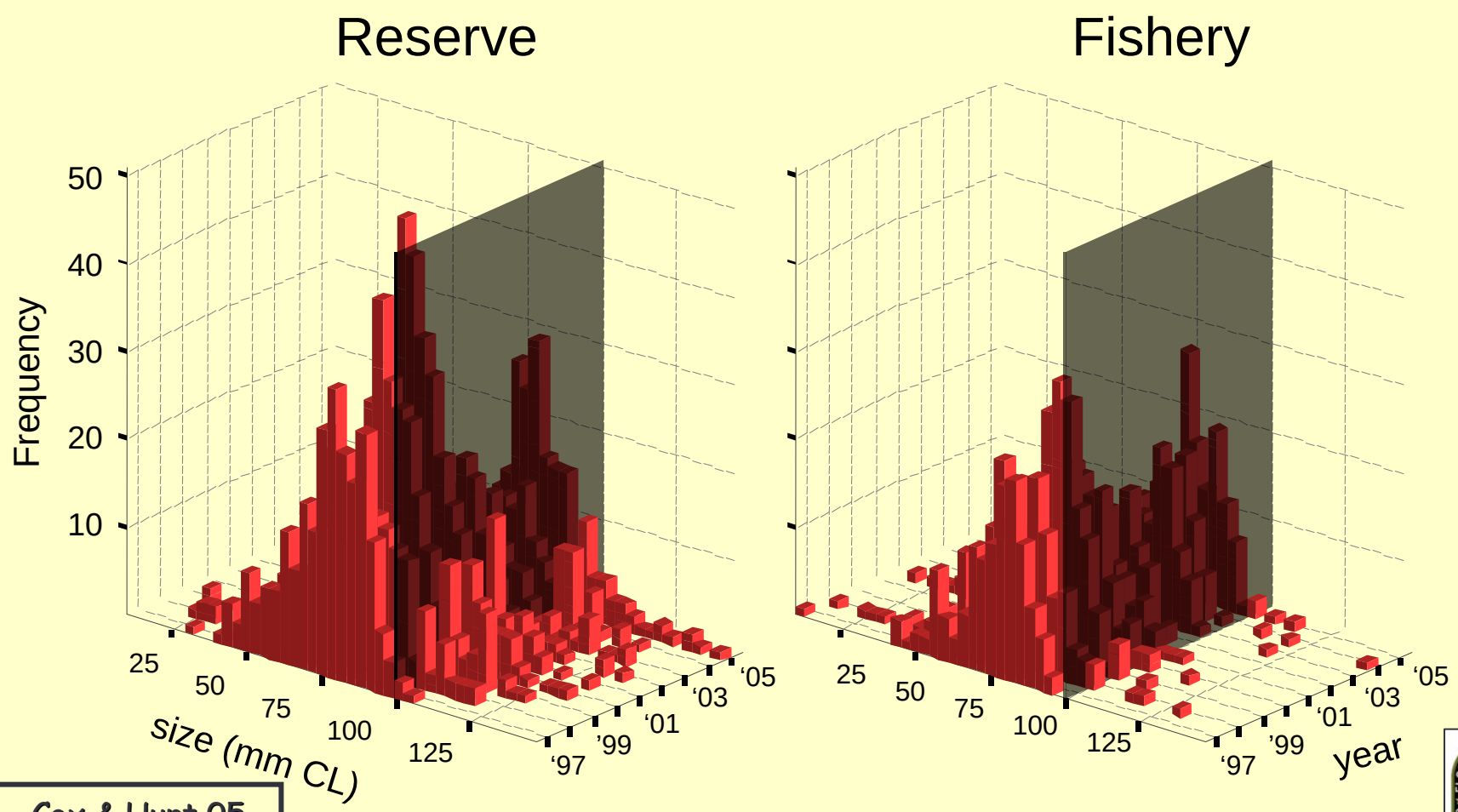
Western Sambo Ecological Reserve



Cox & Hunt 05

Size-Frequency of Male Spiny Lobsters

Western Sambo Ecological Reserve



Cox & Hunt 05

Preliminary Marine Zone Effects

- No changes in ecological processes such as coral recruitment; may require more replication and time
- Sessile benthic species are not showing short-term responses
- Mobile, heavily exploited species responded < 5 years: spiny lobster and certain reef fishes
- No evidence of negative economic impacts: marineeconomics.noaa.gov